

REMARKS

Claims 1, 6, 10, and 17 have been amended. Claims 1-20 remain pending.

Applicant reserves the right to pursue the original claims and other claims in this application and in other applications. Claims 1-20 stand rejected under 35 U.S.C. § 103 as being unpatentable over Maus in view of Hambright, or alternatively, Hambright in view of Maus. These rejections are respectfully traversed.

The present invention is directed at an apparatus and method for producing molded optical elements. The apparatus includes a first mold unit containing a plurality of mold cavities and associated flow passageways and a second mold unit having a surface with a corresponding plurality of patterns for sealing against the first unit. In one embodiment, the patterns are integrated into the surface of the second mold unit, thereby permitting the production of molded elements without requiring the use of a stamper. In another embodiment, a single puck contains the corresponding plurality of patterns and is fitted against the surface of the second mold unit. With both embodiments, due to the use of physically separated mold cavities and patterns, a plurality of molded optical elements which do not require separation may be produced in a single molding cycle. See specification at page 4, lines 12-19.

Maus is directed at an apparatus and method for injection compression molding of thermoplastic optical lenses (e.g., eyeglass lenses) and disks (e.g., compact discs, CD-ROMs). The molding technique of Maus consists of four general steps: (a) forming a closed mold cavity; (b) injecting a resin into the cavity; (c) applying a clamping force to the

cavity; and (d) maintaining the clamping force until the resin within the cavity solidifies.

See column 12, line 40 - column 13, line 27. The mold cavities are formed by sets of die inserts (e.g., element 5a' in Figs. 11A and 11B). The die inserts are not patterned and are therefore incapable of forming a patterned surface on the molded product. Thus, if the apparatus of Maus is to produce a molded product having a patterned surface, a stamper must be fit into one of the inserts. Thus, Maus significantly differs from the present invention by requiring the use of a plurality of stampers in order to form a plurality of patterned molded optical products.

Hambright is directed at a method and apparatus for replicating diffractive optical elements using audio/video disc manufacturing equipment. The method of Hambright is illustrated in Figs. 1A, 1B, and 1C. In Fig. 1A, an etch process is applied to a substrate 10. The etching forms the etched substrate 12 of Fig. 1B, which is used to create a mold master 14 having a negative mold pattern. As shown in Fig. 1C, the mold master 14 is used with a mold 16 to create an optical disc 18 having optical patterns corresponding to those that were etched into the substrate 10. See column 3, lines 18-28. Significantly, while the system of Hambright forms a plurality of molded optical elements, the plurality of elements require careful separation after they have been molded. See column 4, lines 26-28.

The Office Action alleges that Maus teaches the claimed invention except for the second mold unit having either integrated patterns or a metal puck having a plurality of patterns. The Office Action relies upon Hambright for the teaching of forming mold

patterns directly upon a mold surface. In particular, the Office Action alleges that mold master 14 corresponds to a mold element having the desired optical configuration, i.e., corresponding to the claimed patterned metal puck. Applicants respectfully disagree. Hambright is directed at using audio/video disc manufacturing equipment for producing a plurality of optical elements. As recognized by the Office Action at page 1 paragraph 2, the mold master 14 illustrated in Figs. 1B and 1C is a stamper. This fact is significant because no combination of Maus and Hambright teaches or suggests the use of a the second mold unit having integrated patterns. Additionally, in both Maus and Hambright, each mold cavity requires the use of a separate stamper. This is in contrast to the present invention which, in one embodiment, utilizes a single metal puck spanning the plurality of cavities.

Claim 1 recites “a second mold unit having an integrated mold surface for sealing against said first unit, said integrated mold surface containing a plurality of patterns for molding optical patterns in the optical elements.” Maus and Hambright are devoid of any teachings or suggestions regarding the use of an integrated mold surface. Claims 2-5 depend from claim 1 and are believed to be allowable over the prior art of record for these reasons and because the combination defined in the claims is not shown or suggested by the cited references.

Claim 6, 10, and 17 recite “locating said single metal puck against a mold surface to seal a plurality of mold cavities and flow passageways formed upon said mold surface.” Maus and Hambright are devoid of any teachings or suggestions regarding the use of a single metal puck which seals a plurality of mold cavities and flow passageways

formed upon a mold surface. Claims 7-9 (which depend from claim 6), 11-16 (which depend from claim 10), and 18-20 (which depend from claim 17) are believed to be allowable over the prior art of record for these reasons and because the combination defined in the claims is not shown or suggested by the cited references.

Finally, please note that the canceled and/or amended claims have been canceled and/or amended in this case solely for the purpose of furthering the prosecution of the present application. Applicant reserves the right to claim the subject matter of the canceled claims, the claims pending prior to this Amendment, and/or the subject matter of other claims embodied in this application, or any continuation, division, CPA, reissue, reexamination or other application. Any amendments made to the application are not made for the purpose of distinguishing the claims over prior art, except as specifically discussed in the Remarks section of this paper.

In view of the above, each of the presently pending claims in this application is believed to be in immediate condition for allowance. Accordingly, the Examiner is respectfully requested to withdraw the outstanding rejection of the claims and to pass this application to issue.

Dated: June 28, 2001

Respectfully submitted,

By 

Mark J. Thronson

Registration No.: 33,082

Christopher S. Chow

Registration No.: 46,493

DICKSTEIN SHAPIRO MORIN &
OSHINSKY LLP

2101 L Street NW

Washington, DC 20037-1526

(202) 775-4756

Attorneys for Applicant

Version With Markings to Show Changes Made

1. A mold apparatus for producing molded optical elements, said apparatus comprising:

a first mold unit for defining mold cavities and flow passageways; and

a second mold unit having [a] an integrated mold surface for sealing against said first unit, said integrated mold surface containing a plurality of patterns for molding optical patterns in the optical elements.

6. [The mold apparatus of claim 1, wherein said second mold unit includes a flat metal puck covering said mold cavities and said flow passageways.] A mold apparatus for producing molded optical elements, said apparatus comprising:

a first mold unit for defining a plurality of mold cavities and flow passageways; and

a second mold unit having a mold surface for sealing against said first unit, said mold surface containing a corresponding plurality of patterns for molding optical patterns in the optical elements, said optical patterns being located on a single flat metal puck covering the plurality of mold cavities and said flow passageways.

10. A method for making molded optical elements, said method comprising the steps of:

providing a single metal puck with a plurality of optical patterns;

locating said single metal puck against a mold surface to seal a plurality of [form] mold cavities and flow passageways formed upon said mold surface; and

subsequently, molding optical elements within said mold cavities such that said optical patterns of said single metal puck are formed in said optical elements.

17. A method of making a mold apparatus, said method comprising the steps of:

forming a plurality of optical patterns in a single metal puck;

locating said single metal puck against a mold unit to seal a plurality of [form] mold cavities and flow passageways formed upon said mold surface; and

locating mold pins in said mold unit to define the thickness of said mold cavities.